## REMARKS

Claims 1-27 are pending in the application and are rejected.

Applicants amend the specification and claims as shown above and request reconsideration of the amended claims in view of the following remarks.

*Information Disclosure Statements*

Applicants note that the Office Action acknowledges the Information Disclosure Statement that was submitted on May 14, 2007 but does not acknowledge the Information Disclosure Statement that was submitted on February 6, 2009. A copy of the second disclsosure is submitted with this response.

Applicants further note that one disclosed reference (Yang) was omitted from the Information Disclosure Statement that was submitted on May 14, 2007. A statement is submitted with this response that lists this reference.

Applicants respectfully request that the Examiner initial the references shown on the enclosed forms and that all cited references be made of record in this application.

*Claim Rejections Under Section 101*

Claims 19-27 are rejected under 35 U.S.C. § 101 for reciting non-statutory subject matter.

In response, Applicants amend claim 19 to recite a "computer-readable storage medium recording a program of instructions" and request reconsideration.

*Claim Rejections Under Section 112*

Claims 1-27 are rejected under 35 U.S.C. § 112, second paragraph. The Office Action indicates these claims are not clear because claims 1, 10 and 19 recite "sets of groups of blocks" and a "set of one or more control parameters" associated with each group, and it is "confusing to use the same word 'set' to mean different things."

In response, Applicants amend independent claims 1, 10 and 19 as shown above and request reconsideration. Dependent claims 5, 8, 14, 17, 23 and 26 are amended to conform their language to the changes made by amendment to their respective base claims.

*Claim Rejections Under Section 102 -- Youn*

Claims 1-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 7,283,968 (referred to as "Youn").

Applicants respectfully traverse the rejection of these claims because Youn does not disclose or suggest all claim features. Applicants concede there is similarity of purpose or object between what is claimed and what is disclosed in Youn but respectfully submit that Youn does not disclose or suggest the claimed method of achieving this object.

Claim 1

Youn discloses a coding system in which long windows or short windows are used to generate frames of encoded audio information. If a long window is used, one long window is used for each frame. If a long window is not used, eight short windows are used for each frame. If short windows are used, some effort is made to control the grouping of the short windows to balance a trade off between coding efficiency and sound quality (see col. 2 lns. 31-38).

Referring to Fig. 1, a filterbank module 102 includes a window type determinator 108 that determines whether each frame uses one long window or several short windows, and a window grouping determinator 116 that determines the grouping of short windows if a long window is not used (col. 4 lns. 39-65). Referring to Figs. 2-3, the window type determinator 108 determines the type of window(s) to use by determining whether there is a transition from a steady signal to a transient signal (col. 5 lns. 65-67). This is done by calculating the energy of adjacent frames from the MDCT coefficients of the frames (col. 6 lns. 1-45). These MDCT coefficients are obtained from a MDCT using one long window for each frame (Fig. 4 and col. 6 ln. 63 to col. 7 ln. 39).

The window type determinator 108 "operates directly on MDCT" coefficients to calculate frame energy (col. 6 lns. 51-53). Short windows are used only if these energy calculations indicate there is a transition from a steady signal to a transient signal (col. 6 lns. 57-59); otherwise, a single long window is used.

If multiple short windows are used, the window grouping determinator 116 determines the grouping of short windows. Referring to Fig. 6 and associated text (col. 8 ln. 7 to col. 9 ln. 3), this is done by classifying the short windows into one of two types based on the energy of the signal contained in the short windows (col. 8 lns. 12-14). Two preliminary groups of windows are formed based on window type (Fig. 8 and col. 8 lns. 38-40). The window type is adjusted to correct any errors (col. 8 lns. 17-37); in this context, an "error" means adjacent windows in a sequence of windows are incompatible with one another. The grouping in these preliminary groups are modified if the number of windows in either or both groups exceeds a threshold (col. 8 lns. 43-45). The threshold may be an empirically-derived constant or a variable threshold equal to the number of windows in the other preliminary group (col. 8 lns. 45-50).

If the number of windows in either preliminary group is deemed to be too large, that preliminary group is divided into two or more "final groups" (col. 8 lns. 59-62). Additional detail for this process is illustrated in Fig. 9 and discussed in col. 10 lns. 4-46.

In summary, Youn discloses techniques that use energy to determine whether a single long window or multiple short windows are used to encode a frame of audio data, and use energy and window counts to determine how short windows are grouped. The Applicants are unable to find any other teaching in Youn in regard to the grouping of windows. The disclosed techniques differ from what is claimed.

Amended claim 1 reads as follows (letters are added to the steps for convenient reference in the following discussion):

> 1. A method for processing blocks of audio information arranged in frames, each block having content representing a respective time interval of audio information, wherein the method comprises:
>
> (a) receiving an input signal conveying the blocks of audio information;
>
> (b) obtaining two or more measures of quality such that:
>
> (1) each set in a plurality of sets of groups of the blocks in a respective frame has an associated measure of quality,
>
> (2) each group has one or more blocks,
>
> (3) each set of groups includes all blocks in the respective frame and no block is included in more than one group in each set, and
>
> (4) the measure of quality represents excellence in results obtainable by processing each block in a respective group according to one or more control parameters associated with the respective group;
>
> (c) analyzing the measures of quality to identify a selected set of groups having a minimum number of groups such that a measure of processing performance obtained at least in part from the associated measure of quality is higher than a threshold; and
>
> (d) processing each group of blocks in the selected set of groups according to the associated one or more control parameters to generate an output signal representing contents of the input signal and representing the associated control parameters for each group in the selected set.

Applicants respectfully submit that Youn does not disclose or suggest step (b) that obtains the claimed measures of quality, and does not disclose or suggest step (c) that analyzes these measures of quality and selects a set of groups of blocks. As a result, it follows that step (d) also is not disclosed or suggested. These steps are discussed in the following paragraphs.

Step (b)

Applicants respectfully submit that Youn does not disclose or suggest the claimed measures of quality and therefore does not disclose or suggest step (b). The Office Action indicates such measures are disclosed as distortion level (col. 2 ln. 6) and perceptual entity (col. 2 ln. 11). The Applicants respectfully submit that neither of these properties are measures of quality as claimed. We discuss each property in the following paragraphs.

The "distortion level" cited in the Office Action is not a measure of quality as claimed for each of at least three reasons. First, this distortion level is actually an "allowable distortion level" (col. 2 ln. 6). This level refers to the masking properties of a signal (see Akagiri, col. 1, especially lns. 60-61) and is an intrinsic characteristic of the signal instead of some measure of processing results like the coding distortion disclosed in the present application. Coding distortion is a product of an encoding process. The allowable distortion level of a signal is not. Second, the allowable distortion level also pertains to the signal in each window rather than to "each set in a plurality of sets of groups" of blocks or short windows. As recited in (b)(1) of the claim, each set of blocks has an associated measure of quality. Third, Youn does not teach using the allowable distortion level to control grouping as required by step (c). Applicants respectfully submit that any one of these three reasons is sufficient to show the allowable distortion level in Youn does not correspond to the claimed measures of quality.

The same three reasons apply to the "perceptual entropy" (col. 2 ln. 11) cited in the Office Action. Perceptual entropy refers to an intrinsic characteristic of a signal, what is capable of being perceived, instead of some measure of processing results. Furthermore, Youn does not disclose a perceptual entropy associated with each set of blocks and does not teach using perceptual entropy to control grouping as required by step (c). Each of these three these reasons by itself is sufficient to show the perceptual entropy in Youn does not correspond to the claimed measures of quality.

The Office Action does not mention energy as a possible measure of quality. The Applicants discuss it here to assist in advancing prosecution. The Applicants believe it is clear that energy is also an intrinsic characteristic of a signal rather than a measure of processing results. Furthermore, Youn teaches calculating energy for each window rather than obtaining energy for "each set in a plurality of sets of groups" of blocks or short windows. For any of these reasons, energy does not correspond to the claimed measures of quality.

Step (c)

Applicants respectfully submit that Youn does not disclose or suggest analyzing the measures of quality to identify a selected set of groups having a minimum number of groups such that a measure of processing performance obtained at least in part from the associated measure of quality is higher than a threshold.

First, the Applicants respectfully submit that Youn cannot disclose this step because it does not disclose the claimed measures of quality.

Second, even if such measure were disclosed, they are not used to identify a selected set of groups as claimed.

The Office Action indicates Youn does disclose this step but it refers to text that describes a process unrelated to any alleged measure of quality as claimed. In particular, the Office Action refers to a process that compares gradient energy to a threshold (col. 7 lns. 33-39) and to a process that compares a number of windows to a threshold (col. 8 lns. 43-58); however, the gradient energy represents a characteristic of the signal rather than a measure of processing performance obtained from a measure of quality as claimed, and neither the threshold nor the numbers of windows are measures of processing performance obtained from a measure of quality as claimed.

Furthermore, neither section of the cited text discusses identifying a set having a minimum number of groups meeting the specified criteria as claimed.

Other Claims

Similar reasons apply to independent claim 10 and 19. The dependent claims add further limitations to their respective base claim.

With regard to claim 2, the blocks comprise time-domain samples. The Office Action refers to col. 2 ln. 2 for support of the rejection but it does not show how blocks of time-domain samples are processed as claimed. The cited text refers only to the input audio signal.

Claim 5 recites measures of cost representing amounts of resources needed to process the blocks of in a set of blocks according to associated control parameters. The Office Action relies on the "side information" in col. 7 ln. 64 to col. 7 ln. 59. (The Applicants believe the Office Action was intended to cite col. 7 ln. 64 to col. 8 ln. 59.) The side information disclosed in this text refers to data that accompanies the encoded audio data in an encoded signal. It represents an overhead or cost for encoded signal storage or transmission; however, Youn does not disclose or suggest any side information that is affiliated with each set of groups of blocks that are used to control grouping as required by the claims. The Applicants concede the process disclosed in Youn is directed toward

reducing the amount of side information required but they respectfully submit that Youn does not teach how to use the cost of this side information to control the grouping of blocks.

Claim 6 recites performing the analysis of step (c) iteratively to identify and exclude selected sets from further processing. The Office Action refers to the process shown in Fig. 9 to reject the claim; however, the process in Fig. 9 differs from what is claimed in at least two respects: First, it is not performed iteratively. Second, it does not analyze any measure of quality including those alleged by the Office Action to exist in Youn.

Claim 7 recites a second measure of performance for pairs of groups and merging the pairs having highest second measures of performance. The Office Action refers to a portion of the process illustrated in Fig. 9 but this differs from what is claimed in several respects. First, as mentioned earlier, the process shown in Fig. 9 is not iterative. Second, whatever measure is used in step 902, it is not a second measure but is instead the same measure (length) that is used throughout the process. Third, the alleged steps 916-922 do not merge pairs of groups but instead split groups to form a third group. Fourth, contrary to what is alleged in the Office Action, steps 918-922 do not pertain to the control of an iterative process and do not use a threshold.

Claim 8 adds further limitations to claim 5 that recite the cost is responsive to amounts of data needed to represent control parameters and computational resources needed to process the blocks of information. The Office Action refers to "side information" that is a measure of cost that is dependent on the number of groups. Youn never discloses or suggests determining or calculating amounts of side information; therefore, we disagree that the side information in Youn is used as a measure of cost.

Claim 9 adds further limitations to claim 5 that recite the cost is responsive to amounts of computational resources needed to process the blocks of information. The Office Action refers to side information as this measure of cost and attempts to explain how it is related to computational resources. The Applicants do not understand this explanation and are unable to understand how side information is thought to be a measure of computational resources needed to process blocks of audio information. They respectfully submit that it is not.

Similar reasons apply to corresponding dependent claims of independent claims 10 and 19.

*Claim Rejections Under Section 102 -- Akagiri*

Claims 1-6, 8-15, 17-24 and 26-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 6,456,963 (referred to as "Araki").

Applicants respectfully traverse the rejection of these claims because Akagiri does not disclose or suggest all claim features.

Claim 1

Akagiri discloses a coding system that is similar in some respects to what is disclosed in Youn and discussed above. The coding system uses either long windows or short windows to generate frames of encoded audio information. If a long window is used, one long window is used for each frame. If a long window is not used, eight short windows are used for each frame. The techniques in Akagiri are directed toward improving the process that is used to decide whether to use a long window or short windows to encode a frame of audio data. Unlike Youn, the techniques disclosed in Akagiri do not control the grouping of short windows for subsequent encoding.

Akagiri provides a more detailed disclosure of the techniques used to determine whether to use long or short windows. Calculations are performed to estimate the predictability of transform coefficients, the tonality of the audio signal represented by these coefficients, and the perceptual entropy for long and short blocks of transform coefficients obtained using long and short windows (col. 3 ln. 52 to col. 5 ln. 12). The perceptual entropy of the short blocks are compared with one another to define groups of short blocks having perceptual entropy values that are sufficiently similar (col. 5 lns. 47-52). If the process produces only one group of short blocks, then the perceptual entropy of all short windows are deemed to be sufficiently similar to one another and one long window is used to encode the frame; otherwise, short windows are used (col. 5 lns. 52-58). This grouping of blocks is not used further in the encoding process.

Akagiri indicates that this technique does not always reach the correct decision (col. 7 ln. 52 to col. 8 ln. 6), and that it is necessary to consider combining tonality with psychoacoustic masking properties of the signal (col. 8 lns. 6-8). The majority of the disclosure in Akagiri describes techniques that address this problem.

In summary, Akagiri discloses techniques that calculate signal properties such as masking, perceptual entropy and tonality. These calculated properties are used to decide whether to use one long window or eight short windows to encode a frame of audio information. These techniques differ from what is claimed in ways that are similar to what is discussed above for Youn. Referring to claim 1 shown above, Applicants respectfully submit that Akagiri does not disclose or suggest step (b) that obtains the claimed measures of quality, and does not disclose or suggest step (c) that analyzes these measures of quality and selects a set of groups of blocks. These steps are discussed in the following paragraphs.

Step (b)

Applicants respectfully submit that Akagiri does not disclose or suggest the claimed measures of quality and therefore does not disclose or suggest step (b). The Office Action indicates such measures are disclosed as distortion level (col. 4 ln. 51) and perceptual entity (col. 4 ln. 64). These same two signal properties are discussed above. The Applicants respectfully submit that neither of these signal properties are measures of quality as claimed.

Step (c)

Applicants respectfully submit that Akagiri does not disclose or suggest analyzing measures of quality to identify a selected set of groups having a minimum number of groups such that a measure of processing performance obtained at least in part from the associated measure of quality is higher than a threshold.

First, Applicants respectfully submit that Akagiri cannot disclose this step because it does not disclose the claimed measures of quality.

Second, even if such measure were disclosed, they are not used to identify a selected set of groups as claimed.

The Office Action indicates Akagiri does disclose this step but it refers to text that describes a process that does not identify a selected set of groups having a minimum number of groups as claimed. Instead, the disclosed process merely examines calculated perceptual entropy and arranges the blocks in groups according to the perceptual entropy values. Nothing is done to identify a set of blocks having a minimum number of groups according to the claimed criteria.

Other Claims

Similar reasons apply to independent claim 10 and 19. The dependent claims add further limitations to their respective base claim.

With regard to claim 2, the blocks comprise time-domain samples. The Office Action refers to Fig. 5 for support of the rejection but it does not show how blocks of time-domain samples are processed as claimed. The cited text refers only to the input audio signal.

Claim 5 recites measures of cost representing amounts of resources needed to process the blocks of in a set of blocks according to associated control parameters. The Office Action refers to the "scale factors" in col. 5 lns. 48-67 and col. 3 lns. 26-50. Akagiri does not disclose or suggest how the scale factors are used to control the grouping of blocks as required by the claims.

Claim 6 recites performing the analysis of step (c) iteratively to identify and exclude selected sets from further processing. The Office Action refers to the process shown in Fig. 8A to

reject the claim. Unlike the process relied on in Youn discussed above, the process in Akagiri is iterative; however, this process differs from what is claimed in at least two respects. First, it does not identify and exclude sets from further processing. Second, it does not identify a set of groups having a minimum number of groups as set forth in claim 1. The illustrated process obtains a count of groups of blocks that is used only to select the use of either a long window or short windows.

Claims 8 and 9 as amended add further limitations to claim 5 that the Office Action indicates is not rejected under Akagiri.

Similar reasons apply to corresponding dependent claims of independent claims 10 and 19.

*Amendments*

Claims 6, 7, 15, 16, 24 and 25 are amended to remove multiple dependencies.

Dependent claims 28-36 are added to recite additional limitations to those already recited in their respective base claims.

The text specification is amended to correct a typographical error.

**CONCLUSION**

Applicants amend the application and request reconsideration in view of the discussion set forth above.

Respectfully submitted,

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Enc. Corrected substitute forms PTO-1449